INDIA'S FIGHT AGAINST TUBERCULOSIS

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RAJKUMARI AMRIT KAUR

FOREWORD

This book is the first comprehensive presentation of the history of the antituberculosis movement in India. I am happy that it has been possible to bring out this publication at a time when India is carrying out an extensive programme for the control of tuberculosis. The Tuberculosis Association of India deserves to be congratulated on making available a record of the evolution of events which will be useful for both present and future workers and indeed for all who are interested in the cause of tuberculosis.

Amrit Kaur

Minister for Health,
Government of India
and
President,
Tuberculosis Association of India.

New Delhi,
31-10-1956.

PREFACE

In this book an attempt has been made to give, for the first time, a comprehensive review of the development of the anti-tuberculosis movement in India, with special reference to non-official effort.

The Tuberculosis Association of India has been for some time contemplating the bringing out of this publication. The need for this was felt because of the fact that some of the early pioneers are no more and with the passage of time the experiences and records of individual workers of the past and present may not be available for general reference.

A Committee consisting of Dr. R. B. Billimoria, Dr. A. C. Ukil, Rev. R. M. Barton, and Dr. P. V. Benjamin (*Convener*) was appointed by the Tuberculosis Association of India in March 1952, for collecting material for this purpose. The material so collected was compiled by Rev. R. M. Barton, Pathologist, Union Mission Tuberculosis Sanatorium, Arogyavaram, and revised and abridged. Special mention must be made of the help given by Mr. B. M. Cariappa, Secretary of the Tuberculosis Association of India.

We are conscious of the fact that this book gives only a very short outline and some of the details that were supplied to us have been curtailed for the sake of brevity. Further we are also conscious that some records of the work of individual pioneers may have been left out as these could not be secured.

We hope this publication will give, as it is intended to give, to those who are interested in this movement in India and elsewhere, and specially to our friends from the different countries of the world who are attending the XIVth International Tuberculosis Conference in Delhi early in 1957, a bird's-eye view of the development of the anti-tuberculosis movement in this country.

We record our thanks to the members of the Committee and many others who have cooperated with us in bringing out this publication.

P. V. BENJAMIN,
Technical Adviser,
Tuberculosis Association of India.

NEW DELHI,
29-10-1956.

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Chapter I

GENERAL INTRODUCTION

To appreciate the problems facing India in its fight against tuberculosis it is necessary to take into consideration several factors, particularly those associated with the physical and social conditions of the country.

Population

In the last census (1951) the population of India was 356,876,394,* that is, about one-seventh of the population of the world. The vast majority of the people are rural, these numbering about 294,800,000, and only 61,800,000 are classified as urban. The population is scattered over a vast area, the distance from Kashmir to Cape Comorin and from Assam to the West Pakistan border being over about 2,300 miles each way. There are 559,089 villages, a village having population of about four to five hundred. Towns and cities number 3,018 of which 73 have a population of 100,000 or more. The average density of the population is about 281 per square mile, but it varies from 61 in the desert regions of Rajasthan, to 1,015 in the State of Kerala. The density in the large cities is as high as 88,953 in Calcutta, and 25,579 in Bombay per square mile.

Languages

There is no one language which is spoken or understood throughout the whole of the country. At present English is used in different parts of the country and is the means of communication between the Central and the State Governments and even in the States most of the official correspondence above the village level is done in English. However, Hindi is being increasingly used and it is expected that in a few years' time it will take the place of English, although English will still have to be used for certain purposes.

*This figure does not include Jammu & Kashmir State, certain tribal areas in Assam, and about 268,000 persons in the Punjab.

The number of people speaking the major Indian languages is as follows :—

	Number in millions
Hindi, Urdu, Hindusthani and Punjabi	150
Marathi	27
Bengali	25
Gujarat	16
Oriya	13
Assamese	5
Kashmiri	2
Telugu	33
Tamil	27
Kannada	14
Malayalam	13

Besides these there are a large number of languages or dialects—47 spoken by groups of one lakh or over and 72 spoken by smaller groups.

Literacy

The literacy in India according to 1951 census was about 16 per cent. It varied considerably in different communities and in different parts of the country, but it is rapidly increasing. In general, the people vary from the most highly educated who have made and are making their contribution to knowledge in the world of philosophy, religion, science and literature, and are also making a mark in world affairs, down to the primitive tribes living in forests and jungles almost untouched by modern civilization.

Religion

By religion the population is divided as follows :—

	Millions
Hindus	303.2
Muslims	35.4
Christians	8.2
Sikhs	6.2
Tribal animists	1.7
Jains	1.6
Buddhists	0.2
Zoroastrians	0.1
Others	0.1

Physical features of country

India has varied physical features and climate. Kashmir for example, is in latitude 34°N, approximately the same latitude as of

North Africa and Florida, U.S.A.; Cape Comorin is in latitude 8°N of the equator. In the north the Himalayas have the highest peaks in the world; there are the vast river plains of the Ganges and the Brahmaputra. In the south is the extensive Deccan plateau about 2,000 ft. above sea level and the coastal areas. There are the thick forest areas in the north, central and western India and desert regions in central India.

Temperature

The climate varies considerably in different parts of the country. In the north the summers are hot and winters are usually cold. In the south there is very little variation during the year, the temperature ranging generally between 80° and 100°F.

Rainfall

Rainfall is equally varied, Chirapunji in Assam having an annual rainfall of about 500 inches and Rajasthan about two to three inches only. Rainfall is usually confined to the two monsoon seasons. The south-west monsoon begins towards the end of May and lasts until September, and the north-east begins about the middle of October and lasts about two months. Some parts of the country get rains during both the seasons. For long periods most parts of the country do not have rains, sometimes as long as six months. At other times cyclonic disturbances may cause exceptionally heavy rainfall.

Water supply

Owing to the seasonal nature of the rainfall, India cannot depend only on rivers for its water supply. Only a few of the large rivers flow all the year round. People therefore have to rely for their drinking water mainly on wells but in the larger towns there are facilities for central protected water supply. Underground water is maintained to a large extent by artificial catchment areas which also supply water for irrigation.

Constitution of India

Independence

Prior to 1947 India was under the British but, on August 15, 1947, the country became independent. It continued under the British Crown until January 26, 1950, when it was declared a Republic. At the time of declaration of Independence in 1947 areas of West Punjab, Sind, Baluchistan, the North West Frontier Province and East Bengal separated as a new State, Pakistan. After independence princely States in India ceased to exist.

Centre and States

India today is a Union of fourteen States each having its own legislature, with defined spheres of governance. In addition, there are six 'territories' which are administered by the Union Government. The Central Government has an overall control of the administration of the country and has direct responsibility for foreign policy, defence, railways, communications and currency. The States, however, enjoy considerable autonomy particularly in regard to health and education. The Central Government is controlled by the Parliament which consists of two Houses, viz. Lok Sabha and Rajya Sabha. Members of the Lok Sabha are elected by universal adult franchise and of the Rajya Sabha through the State Legislatures. The Rajya Sabha has a few nominated members also. Election to State legislatures too is by adult franchise.

The head of the Government of India is the President elected every five years. He is assisted by a Cabinet of Ministers. The leader of the largest party in the Parliament is invited by the President to form the Cabinet.

Chapter II

SOCIAL CONDITIONS

Standard of living

The general poverty of the people of India is recognised by all, and one of the prime motives behind the Five Year Plans is to raise the economic level of the whole country. The First Five Year Plan has already had some effect and has raised the *per capita* income from about Rs. 270 to about Rs. 310. While the standard of living in India need not be of the pattern of that in Western countries where the necessities of life are influenced by the many products of modern scientific developments, yet the low per capita income in India does mean that a large part of the population is living at subsistence level or even below it. This naturally affects the health of the people.

Overcrowding

Another noticeable factor is the overcrowding of population. In the cities crowding is as bad as in those in most parts of the world. In some cases the joint family system compels a large number of people to live in single dwellings. The poorer people in the villages generally have huts or one or two-roomed houses for the whole family. In most parts of the country even villages are crowded as the houses are confined to recognised groups and areas only.

Industrialisation and occupational conditions

As in the West during the industrial revolution, so in India, the growth of industries has been associated with a rapid growth of population in these areas resulting in overcrowded working and living conditions.

It is recognised that inadequate or unbalanced nutrition paves the way for many diseases of which tuberculosis is only one. But overcrowding facilitates infection. This is particularly so in India where it is usual for members of a whole family of eight or more to sleep in a single room and frequently a room with very little ventilation. When one member of the family suffers from tuberculosis others cannot escape infection.

One saving factor, however, is that the climate of India permits people to spend most of their time in the open, and in many parts of

the country sleeping in the open during the hot season is common. But in towns this is often difficult.

Dust

In India dust nuisance, especially during the hot weather, is general. While sunlight may destroy tubercle bacilli this is not possible inside dark rooms where dust may be a vehicle of infection.

Spitting

Promiscuous spitting is common in the country. Spitting in the open may not be a special cause for the spread of tuberculosis, because of the disinfecting power of the sun, but in places sheltered from sunlight, this may be a source of infection. This habit is gradually disappearing and it is hoped that by the educative propaganda that is being carried out it will cease to be a serious menace in course of time.

Purdah system among women in some sections of the community was thought to be one of the causes responsible for tuberculosis. This custom is now changing.

Increased communications

Increased means of communications are a cause for the spread of tuberculosis. People from villages coming to work in the cities, often contract the disease and then return to their villages thereby spreading it even in remote areas.

Educational institutions

Crowding of students in schools, colleges and specially hostels and boarding homes attached to them provides opportunities for infection. Crowding in entertainment halls, trains and buses and insanitary conditions in eating houses also contribute to the spread of the disease.

Lack of education

Inadequate education regarding the nature of tuberculosis and how to prevent it, general lack of knowledge of the laws of hygiene, and apathy in following hygienic laws even if known—all these factors constitute some of the difficulties India faces in its fight against tuberculosis. As the majority of the people are not literate, it is difficult to reach them by the written word.

Customs die hard everywhere and India is no exception. But there is reason to be optimistic about marked changes in this respect particularly in view of the new awakening in the country following independence and the implementation of development schemes, specially with regard to education, health and economic uplift.

Chapter III

PREVENTION OF TUBERCULOSIS

Tuberculosis in India began to present itself as a problem in the early years of this century. The need for investigation about it was expressed in a resolution of the All-India Sanitary Conference in Madras in 1912: 'Statistics appear to show that this disease is rapidly increasing in India, especially in urban areas, but it is doubtful whether the increase is real or apparent only and due to such causes as more accurate diagnosis and registration.'

Prevalence of tuberculosis

The outcome of this and similar discussions was the appointment by the Government of India of Dr. A. Lankaster, a missionary who had been working for some years in India, to make an enquiry into the tuberculosis problem in the country. During the course of his enquiry lasting over two years, 1914-1916, he came to the conclusion that the prevalence of tuberculosis was alarmingly high in various parts of the country; 'that many large areas in India, which 40 years ago were practically virgin soil to tuberculosis, have now become to a considerable extent infected; that phthisis has been for generations, probably centuries, a common disease of the larger cities, yet even in these there has been a considerable actual increase during this period; that while in smaller towns and in the village districts it was formerly comparatively rare and even absent, yet in these areas the disease has made its appearance and spread widely. The increase has been most marked in connection with those centres which have shown the greatest commercial and educational development and in the village districts which have been linked up with them by direct lines of communications.'

DR. A. LANKASTER

Paucity of reliable statistics

Paucity of reliable statistics was a handicap in obtaining accurate knowledge about the prevalence of tuberculosis. It is still so although the position has rapidly improved in recent years. In the absence of medical men over large parts of the country, information about deaths from various diseases had to come from lower Government officials who in turn often relied for their information on relatives or neighbours of those who died. Causes of death were grouped under a few (eight) broad headings which included 'fevers', 'dysentery and diarrhoea', 'respiratory diseases' and 'other causes'. It was possible to include tuberculosis under any of these headings according to the most prominent symptoms noted before death. Sir Leonard Rodgers in one investigation estimated that 9 per cent of those classified as dying of fever, died of tuberculosis. A similar analysis of figures for Cossipore Chitpur near Calcutta, showed a mortality from tuberculosis of 2.68 per mille; half of these had been reported as dying of 'fever'. Of the total deaths 7.9 per cent were due to tuberculosis. Hospital figures were also unreliable, partly because of poor facilities for diagnosis as well as inadequate knowledge of tuberculosis and partly because large numbers of the sick had no contact with hospitals.

Vital statistics in towns

In cities and towns some figures for tuberculosis deaths were available but these were the minimum and the real figures were probably much higher. Tuberculosis deaths in Calcutta showed 2.1, in Bombay 2.83 and in Madras 2.5 per mille in 1919. Other cities gave equally high or even higher figures, Ahmedabad showing a tuberculosis death rate in 1919 of 5.91 per mille.

Post-mortem figures

Another way of judging the prevalence of tuberculosis was by a study of post-mortem examinations. Sir Leonard Rodgers analysed the figures for Calcutta for over 22 years and found that no fewer than 17 per cent of the total deaths had been due to tuberculous disease.

Insurance figures also told a similar story. The figures for the Oriental Assurance Company for 1910-1917 showed 8.5 per cent deaths of their insured persons as due to tuberculosis.

Surveys

During the last few years it was possible to get a more definite picture of the tuberculosis position in India than what was available some twenty-five years ago. This has been largely due to the results of tuberculin testings and other studies by individual workers in

different parts of the country. Recently we have more data also on account of the mass BCG Vaccination Campaign and miniature x-ray examinations of groups of population in the country.

Tuberculin tests

Tests done by Ukil (1930) in different parts of India including areas in Bengal, Madras, Assam and Bihar showed a tuberculin-positive reaction varying from 11.4% to 33.3% up to the age of 15 and 69.9% above that age. Benjamin (1938) in a tuberculin survey done in a rural area of South India noted tuberculin positive reaction in 8.2% in villages and 11.6% in small towns among those under 15. Another tuberculin survey by him (1939) in a suburb of Madras showed a positive reaction in 41.2% of those below the age of 15 and 69.8% of those above. A sample survey done by Lal (1944) in Bengal showed that the percentage of tuberculin positives was 88 in urban and 32 in rural areas.

Figures showing the results of country-wide tuberculin tests done in connection with the BCG Vaccination Campaign in India from 1948 are now available. About 75.9 million persons have been tuberculin tested up to the end of June, 1956. A detailed analysis of some of the groups tested has shown that in the industrial cities about 75% of the population has become tuberculin positive by 15 years. Further analysis has also shown that tuberculous infection is widespread in the country. By the age of 14, from 40 to 60% and by the age of 35, seventy-five to over 90% have become infected in almost all areas. Infection rate is generally higher in urban areas than in semi-urban and rural areas.

Morbidity surveys

A survey of people living in a suburb of Madras showed a morbidity rate of 2.6% (Benjamin, 1939). A survey in the urban areas in West Bengal (Lal, 1944) showed a morbidity rate of 7%.

More recently a number of miniature radiography surveys have been conducted. The first of these was by Aspin (1945) in a military centre. On the basis of examination of 6,000 Gurkhas—half of them recruits and the rest labour units—morbidity rates of 1.0% and 3.4% respectively were found.

Similar surveys of special groups in Delhi (Sikand and Raj Narain, 1952), Madras (Philip, 1952) and Trivandrum (Hertzberg, 1952) have shown morbidity rates of 1.8%, 2.5% and 1.18% respectively.

In Faridabad, a colony near Delhi for displaced persons, a morbidity rate of 1.36% was noted (Sikand and Raj Narain, 1952). In Madanapalle, a small country town in South India a survey showed a morbidity rate of 1.16% (Frimodt-Moller, 1949). In the adjoining rural areas of Madanapalle comprising a population of about 40,000, the morbidity rate was 0.42%.

During 1952-53, a group of 42,654 Government of India employees in Delhi were x-rayed and these showed a morbidity of 0.77%.

A sample survey done in 1955, of 2,115 persons comprising 10% of the population above the age of five, in a small town in South India (Ambur) has shown a morbidity rate of 1.4%.

These surveys have shown that the morbidity rates vary from 1 to 2.5% in urban areas; the only survey in a rural area showed a rate of 0.42%.

As these isolated studies may not give a complete picture of the tuberculosis problem either in urban or in rural areas a survey on a sample basis covering different parts of the country including big cities, small towns and rural areas was undertaken by the Indian Council of Medical Research in 1955-56. The data available from this survey up to the end of June 1956, will be presented at the XIV International Tuberculosis Conference in New Delhi in January, 1957.

Chapter IV

EARLY ATTEMPTS TO FIGHT TUBERCULOSIS

With the gradually increasing awareness of the seriousness of tuberculosis in the country, attempts began to be made to deal with it. In its earlier stages, however, the progress was rather slow. This was in part due to the absence of any really effective treatment which could be used to help the victims of the disease. 'Open-air treatment' had been gaining popularity in the West, but this was mainly for early cases. Little could be done for advanced cases and therefore it was felt that with the limited bed accommodation in hospitals in India, it was not possible to take in tuberculous patients who might occupy beds for a long time and in the end might succumb to the disease, and who in the meantime might infect other patients and staff of the institutions.

Private enterprise

But here private philanthropy stepped in on compassionate grounds. Most of the early efforts to provide treatment were made by philanthropic societies and some individuals. It was realised also that isolation of infective cases was a form of prevention—other forms of prevention were not in the public mind as yet. In several instances it was the discovery of tuberculosis among young people in educational institutions which led to the beginning of special facilities to deal with them. No small help in starting anti-tuberculosis work was rendered by individuals who themselves had had the disease. In this India shared the experience of other countries.

Tilaunia and Almora

The first open-air institution for isolation and treatment of tuberculous patients was founded in 1906 in Tilaunia, near Ajmer by a Christian Mission. It was intended mainly for girls from schools and orphanages connected with this mission in North India. An institution in Almora in the Himalayas for tuberculous women was also started by a Christian Mission in 1908 and about the same time a small sanatorium for women and girls at Pendra Road in the Central Provinces (now Madhya Pradesh) was also started.

Arogyavaram

A similar movement began in South India in 1908, which resulted in the founding of the Union Mission Tuberculosis

MISS L. H. HART

DR. C. FRIMODT-MOLLER

Sanatorium, Arogyavaram, Madanapalle. The pioneer work was done by Dr. Louisa Hart, a missionary working in Madanapalle town, who for some years previously treated a number of tuberculous patients in temporary buildings in her general hospital. The Union Mission Tuberculosis Sanatorium with Dr. C. Frimodt-Moller as its Medical Superintendent, founded in 1912, took over these patients and had them transferred to the permanent buildings at Arogyavaram in 1915.

SRI BEHRAMJI M. MALABARI

SRI DAYARAM GIDUMAL

Private societies

The first Sanatorium outside Christian auspices was opened in 1909 at Dharampore in Simla Hills, due to the benefactions of some

Bombay philanthropists, mainly Parsis, and under the management of the Consumptives Homes Society of Bombay.

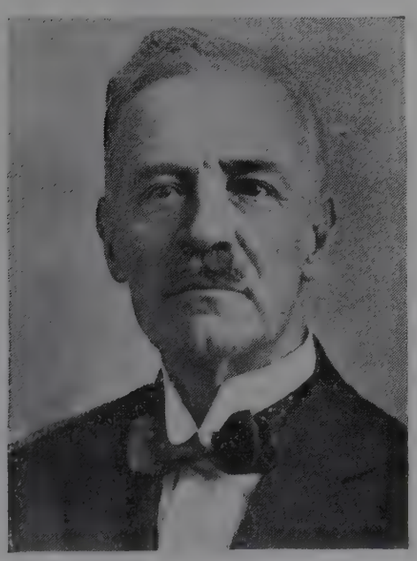
The first sanatorium started under Government supervision was the King Edward Sanatorium at Bhowali, Uttar Pradesh, First sanatorium under Government supervision

CAPT. R. K. KACKER

DR. R. B. BILLIMORIA

opened in 1912, with money collected in that province in memory of King Edward VII.

An instance of a sanatorium established by a private individual is one which was opened in 1912 by Dr. R. B. Billimoria in Poona and which two years later moved to its present site in Panchgani, Bombay State. Individual effort



DR. J. A. TURNER

DR. P. S. CHANDRASEKHARA IYER

Other sanatoria begun about this time were the 'Turner' Sanatorium in Bombay—Dr. Turner was Medical Officer of Health, Other early institutions.

Bombay ; a and sanatorium at Deolali built from a bequest by a private individual Seth Bhagwandas Narotamdas.

Tuberculosis dispensaries

The opening of tuberculosis dispensaries which had a large part in the campaign against the disease in the West, started somewhat later. The first one opened was in Bombay in connection with the Bombay Anti-tuberculosis League. In Madras the King Edward Memorial Institute (now called the Tuberculosis Institute) was established in 1917 by the efforts of Dr. P. S. Chandrasekhara Aiyar.

Anti-Tuberculosis leagues

A number of anti-tuberculosis societies were formed in Bombay, Lucknow and Ajmer about the time of the first war. The main object of these societies was educative propaganda about the causes and prevention of tuberculosis.

The Bengal Tuberculosis Association was founded in January, 1929.

By 1935 only 6,000 beds

Inspite of the growing attention paid to the tuberculosis problem, by 1935 there were only about 6,000 beds available in the whole of India, which then included what is now Pakistan, for the treatment of tuberculous patients. By that time it had been estimated that there were about 500,000 annual deaths from the disease and about two and a half million patients who needed attention.

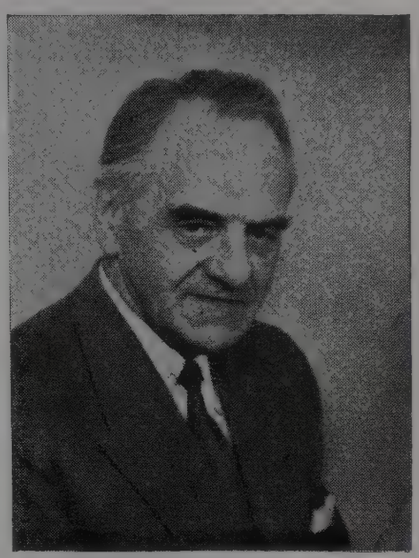
Methods used for diagnosis and treatment

As regards the methods of diagnosis and treatment India was lagging behind until recent times and does not seem to have made use of the knowledge and experience of Western countries in dealing with the disease. For example, as late as 1920, the methods employed for the diagnosis of tuberculosis were ordinary physical examinations without x-rays. The typical tuberculous cases demonstrated at the clinical lectures were of the chronic fibroid type with emaciation and clubbing of fingers. These patients were often confined to isolation huts on the outskirts of general hospitals which were rarely visited by the doctors or the students except for demonstration purposes, and there was an atmosphere of hopelessness with regard to treatment.

The main line of treatment advocated was good food, open air and dry climate. No mention was made even of pneumothorax treatment which was being widely used since 1905 in some of the

Western countries. Patients who were not too sick to move about were usually advised to go to a dry climate and take plenty of exercise for the sake of improving their appetite; feeding or overfeeding of patients was the general rule.

Tuberculin was extensively used between the years 1910 and 1920. Sodium Morrhuate which was being advocated for leprosy was also extensively used in India for tuberculosis. From 1925 onwards Sanocrysin and other gold preparations came into vogue. Artificial pneumothorax was introduced in 1921 in one of the sanatoria in India as a regular form of treatment for pulmonary tuberculosis. Dr. Johannes Gravesen of Denmark who was associated with the Union Mission Tuberculosis Sanatorium for a few years was mainly responsible for introducing and popularising this form of treatment. Thoracoscopy and cauterisation of adhesions were used in 1931. Isolated attempts at thoracoplasty seem to have been made by a few surgeons between 1922 and 1930. Thoracoplasty in its modern form, however, came to be increasingly used since 1932 in some of the institutions. Lung resection for tuberculosis was started for the first time in 1948. The new anti-bacterial drugs are being extensively used in India at present.



DR. JOHS. GRAVESEN

During this period Governments, Central and Provincial, were becoming aware of the serious situation with regard to tuberculosis, but were not able to take concrete steps to deal with it, partly because of their pre-occupation with epidemic diseases like cholera, plague and small-pox which took rapid toll of life, and partly because of the staggering magnitude of the tuberculosis problem and a lack of clear conceptions as to what should and could be done to combat it. Establishment of sanatoria was costly and these institutions could touch only the fringe of the problem, and treat only a small fraction of the vast number of patients, often with poor results, especially if judged by relapses after treatment. A new vision and leadership was called for.

Chapter V

THE TUBERCULOSIS ASSOCIATION OF INDIA

King George V Thanksgiving (Anti-T.B.) Fund

Public opinion began to gather strength and demanded action be taken to deal with the increasing menace of tuberculosis. One of the results of this was the first concerted effort at tuberculosis control in the country as a whole through the organisation of the King George V Thanksgiving (Anti-tuberculosis) Fund in 1929. This Fund collected about 9½ lakhs of rupees and was administered in the beginning in association with the Indian Red Cross Society. It engaged itself in preventive and educative activities and also helped in establishing a number of clinics in various States and in training health visitors. It also organised post-graduate courses for general practitioners. Anti-tuberculosis literature and posters were published and distributed widely. An Organizing Secretary under the Fund visited different parts of the country stimulating anti-tuberculosis activities.

It was at this time that India first became associated with the International Union Against Tuberculosis.

On February 23, 1939, the climax of several years of work was reached when the Tuberculosis Association of India was established. The initiative and enthusiasm of Lady Linlithgow helped in this. Under her patronage, the King Emperor's Anti-Tuberculosis Fund was launched and raised some 85 lakhs of rupees. A major part of this was returned to the provinces and states from which the funds were collected, and the balance along with the King George Thanksgiving Fund formed the nucleus of the resources of the Tuberculosis Association of India.

LADY LINLITHGOW

The Central Association

The promoters of the Tuberculosis Association of India envisaged that it should so mould itself as to be in a position to offer expert advice and become a co-ordinating agency in standardis-

KING GEORGE THANKSGIVING (ANTI-TUBERCULOSIS) FUND, 1934

Sitting : Dr. A. R. Mehta ; Lt.-Col. W. Ross Stewart ; Lt.-Col. G. G. Jolly ; Sir David Petrie ; The Hon'ble K. B. Mian Sir Fazl-i-Hussain ; Lady Bhore ; Lt.-Col. A. J. H. Russell ; Col. C. H. Reinhold ; Dr. F. S. Master.

Standing (1st row) : Dr. P. V. Benjamin ; Dr. G. L. Batra ; K. B. Dr. A. H. Butt ; Dr. K. S. Sethna ; Dr. Paul T. J. Doss ; Dr. Raghubir Chand ; Dr. K. V. Krishnan ; Dr. L. R. Dongrey.

Standing (2nd row) : Dr. A. C. Ukil ; Dr. D. V. G. Muthu ; Dr. B. Jayaram Naidu ; Major A. C. Chatterji ; R. B. Dr. M. Kesava Pai ; Dr. Y. G. Shrikhande.

TUBERCULOSIS WORKERS' CONFERENCE, 1939

Sitting : Dr. B. K. Sikand, Secretary, T.A.I.; Dr. S. K. Sen ; Dr. W. G. Jones ; Dr. P. V. Benjamin ; Dr. K. Vasudeva Rao ; Dr. R. Krishna ; Dr. A. R. Mehta ; Dr. C. Frimodt-Moller, C.B.E. (Hons), Medical Commissioner, T.A.I. ; Major-General G. G. Jolly, C.I.E., K.H.P., I.M.S. (*Chairman*), T.A.I. ; Dr. R. A. Riste ; Dr. A. C. Ukil ; Dr. P. T. Patel ; Dr. F. S. Master ; Capt. R. K. Kacker ; Lt.-Col. R. N. Kharegat ; Dr. Bhagat Ram Khanna.

Standing (1st row) : Dr. K. S. Sanjivi ; Dr. G. R. Kakatnur ; Dr. P. Bhowmik ; Dr. M. L. Talwar ; Mohd. Yusuf Mahji ; Dr. Din Dyal ; Dr. J. M. Roy ; K. S. Dr. Saeed Ahmed ; Dr. A. Hamid ; Dr. Nanasaheb Gokhale ; Dr. John T. Mani ; Dr. L. R. Dongrey ; Dr. K. L. Wig ; Dr. T. J. Joseph ; Dr. F. C. da Cunha ; Dr. C. N. Chandrachud ; Dr. Bhagat Singh Alag.

Standing (2nd row) : Dr. J. M. Gole ; Dr. K. K. Dhar ; Dr. S. H. Kewalramani ; Dr. Ram Rakha Mal Dhir ; Dr. P. K. Sen ; Dr. D. V. G. Muthu ; Lt.-Col. A. C. Chatterji ; Rev. R. M. Barton ; Major G. F. Taylor ; Dr. R. Viswanathan.

HEADQUARTERS, TUBERCULOSIS ASSOCIATION OF INDIA, NEW DELHI

ing methods, promoting consultations and conferences, starting institutions, training workers and educating the public. It was also responsible for starting provincial and state Tuberculosis Associations. As an Advisory Body the Central Association was to offer general advice regarding location, construction, equipment, staff and work of tuberculosis institutions and also regarding health education. It was to train medical and ancillary personnel and promote research. In order to be a centre for disseminating information it was thought that the Association should establish an Information and Statistical Bureau and start an All-India Tuberculosis Journal. It was also to start institutions to serve as models. In order to cater to the whole of India on these matters, a Technical Adviser was to be appointed. The provincial and state associations were expected to adopt a similar policy.

The activities of the Association have generally conformed to the policy outlined at the time of its inception. Broadly speaking the Association's work can be divided into three stages; namely, up to 1942, up to 1947 and after 1947.

1939-1942

In the early stages the Association had the advantage of the propaganda done by the King George Thanksgiving Fund and the

later King Emperor's Fund. It was able to secure as its full-time Medical Commissioner the services of the late Dr. C. Frimodt-Moller, Medical Superintendent of the Union Mission Tuberculosis Sanatorium, Arogyavaram, Madanapalle. He visited all important places in India and assisted in the formation of local associations and the establishment of clinics, hospitals and sanatoria. He strongly advocated organised home treatment of the tuberculous, and the formation of care and after-care committees.

The progress of the Association's work was greatly handicapped by the outbreak of World War II six months after its inauguration. It was difficult to get persons to be trained as doctors, nurses, and health visitors for tuberculosis work. Institutions could not be started. The Association could hold only two conferences and carry out a limited propaganda. However, it established two institutions, namely the New Delhi Tuberculosis Clinic (which is now enlarged as the New Delhi Tuberculosis Centre) and the Lady Linlithgow Sanatorium in Kasauli. In collaboration with the Indian Research Fund Association (now the Indian Council of Medical Research) some initiative on research was taken. It appointed a committee to define the classification of tuberculosis. The report of this Committee which was published in 1940 has served as a guide for tuberculosis workers in India. A Committee consisting of prominent tuberculosis workers serving with the Tuberculosis Survey Sub-committee of the Indian Research Fund Association prepared a manual for tuberculosis surveys.

1943-1947

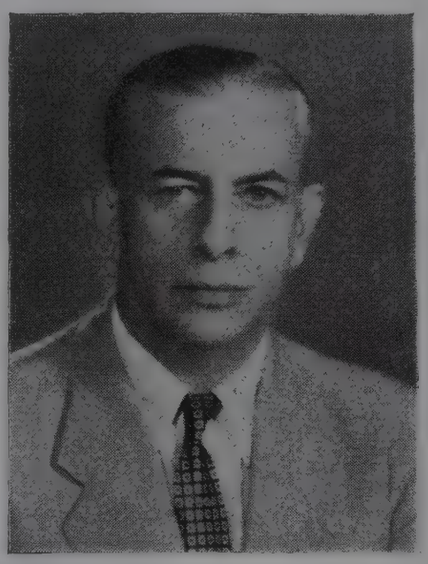
DR. P. V. BENJAMIN

After the retirement of Dr. C. Frimodt-Moller in the latter half of 1941, the Association had to carry on its activities, without a full-time Medical Commissioner, on a ' maintenance basis ' with the advice of Dr. P. V. Benjamin as its Honorary Technical Adviser. A memorandum emphasising the need for treating tuberculosis as a major public health problem which was prepared by him on behalf of the Association was accepted by the Health Survey and Development Committe of the Government of India in 1945. The Association published the

first Directory of Tuberculosis Institutions in 1943. After the end of the war and after an interval of four and half years, the Association again organised its Workers' conferences. It continued organising post-graduate refresher courses for general practitioners and training tuberculosis health visitors. It has brought to the notice of Government and employers the need to give special leave and other concessions to those of their employees suffering from tuberculosis. It organized broadcast talks on tuberculosis and produced a film.

1947 onwards

The activities of the Association increased rapidly after 1947. The reasons were many. Independence brought in a new awareness of the responsibility of the people. Rajkumari Amrit Kaur, Union Health Minister, who takes a very special interest in tuberculosis work, has been President of the Association since 1949. The proposal that the Government of India should have a full-time Adviser in the Ministry of Health, materialised in 1948 as a result of which Dr. P. V. Benjamin, who was Technical Adviser of the Association since 1941, was appointed also as Adviser to Government. This was an important development, and the fact that the Health Minister is the President and the Director-General of Health Services is *ex-officio* Chairman of the Association, made it possible for it to move in a concerted and systematic manner, to work in close co-operation with Government and often to supplement Government activities. In addition to, and largely as a result of these factors, the Association is able to maintain contacts with international bodies such as the WHO and UNICEF.



LT.-COL C. K. LAKSHMANAN

In keeping with the policy originally outlined, expert advice is being made available through the Technical Adviser to State Governments and Associations. From 1948 the Association has a Standing Technical Committee consisting of prominent tuberculosis workers in the country. This Committee recommends steps to be taken in regard to various problems connected with tuberculosis. The introduction of BCG vaccination in India as a preventive measure against tuberculosis, and the other schemes

for tuberculosis control included in the Five Year Plans of the Government are those recommended by this Committee. It has also made recommendations on other matters such as the use of miniature x-ray, domiciliary treatment, research, development of teaching centres and institutions for chest surgery, the establishment of hospitals for tuberculous children and for special groups of people such as employees in railways, posts and telegraphs and universities. Its recommendations have also covered matters regarding the training of tuberculosis workers, standardisation of work in tuberculosis institutions, tuberculosis surveys, the use of antibiotics, standardisation of records, rehabilitation of ex-patients, provision of isolation wards, teaching in tuberculosis and notification of tuberculosis. Many of these recommendations have been accepted by the Government and others are under examination. The Workers' Conference is now an annual and important feature of the Association's work. It has trained doctors, social workers and health visitors. It has helped in the treatment of over 500 ex-servicemen with a special fund placed at its disposal. The Indian Journal of Tuberculosis was started in 1953. From 1950 the Tuberculosis Association of India has organised on an all-India basis the Tuberculosis Seal Sale Campaign. The State Associations are responsible for carrying out this Campaign, and retain for their anti-tuberculosis work 95% of the net collections.

State Associations

State Associations constitute the foundation of non-official anti-tuberculosis work in the country. Before partition there were thirty local associations affiliated to the Centre. These Associations are now being re-organised on the basis of the States set-up after November, 1956. All State Associations have complete autonomy. The factor which binds them to the Centre is a sense of voluntary association.

Sitting : Dr. P. N. Kapoor ; Major Khushdeva Singh ; Dr. S. S. Anand ; Dr. K. S. Sanjivi ; Dr. T. J. Joseph ; Dr. Moti Malkani ; Dr. E. J. T. McWeeney ; Dr. K. L. Wig ; Dr. B. B. Yodh ; Dr. P. V. Benjamin ; Dr. A. Bajaj ; Dr. J. Frimodt-Moller ; Dr. B. K. Sikand; Dr. R. N. Tandon; Shri B. M. Cariappa; Dr. Yudhvir Sachdeva; Dr. L. R. Dongrey; Dr. R. Krishna; Dr. S. M. Majumdar.

Ladies : Mrs. M. Bhave ; Miss K. Das ; Mrs. B. Mukherjee ; Mrs. S. M. Majumdar ; Miss S. Juneja ; Miss L. Gavane.

Standing (1st row) : Dr. D. K. Bhattacharya; Dr. B. K. Banerjee; Dr. C. L. Modi ; Dr. M. A. Rahman ; Dr. D. W. Durugkar ; Dr. Krishan Kumar ; Dr. S. K. Sen Gupta ; Dr. Bhagat Singh ; Dr. N. M. Sinha ; Dr. Bodh Raj ; Dr. K. C. Rastogi ; Dr. Mahesh C. Gupta ; Dr. R. P. Atreya ; Dr. H. P. Agnihotri ; Dr. Hem Raj ; Dr. Pritam Singh ; Dr. Jaswant Singh ; Dr. M. S. Mitra ; Dr. Prithi Pal Singh ; Dr. P. L. Burman ; Dr. J. S. Rastogi ; Dr. B. B. Kirtane ; Dr. M. N. Saikia ; Mr. S. M. Pathak ; Dr. R. Prasad.

Standing (2nd row) : Dr. A. S. Chary ; Dr. R. D. Krupadanam ; Dr. J. A. Thompson Wells ; Dr. B. Mukherjee ; Dr. D. Damodar Das ; Dr. B. S. Mohan ; Dr. S. N. Ghai ; Dr. M. L. Sharma ; Dr. H. L. Tandon ; Dr. V. D. Sapkal ; Capt. Balbir Singh ; Shri A. J. Kalamkar ; Dr. D. N. Shivpuri ; Dr. M. D. Deshmukh ; Dr. V. Hariharan ; Dr. T. Thomas ;—Dr. K. Somayya; Dr. Din Dyal Verma ; Dr. Raj Narian ; Dr. Sita Ram Rau.

Standing (3rd row) Dr. Man Mohan Singh ; Dr. K. P. Bhargava ; Dr. G. Samuel ; Dr. T. Takaro ; Dr. R. H. Betts ; Dr. A. K. Basu ; Dr. S. K. Ganguli ; Dr. B. Sarbadikare ; Dr. F. J. Billimoria ; Dr. V. D. Sapkal ; Dr. F. C. Eggleston ; Dr. S. N. Sharma ; Dr. P. N. Krishan ; Dr. Mathew Philip ; Dr. M. N. Chakrabarti ; Dr. A. Bhavanarayana ; C. Momin ; Dr. H. B. Dingley ; Dr. P. C. Jain ; Shri Faqir Singh.

Last row : Dr. S. C. Srimani ; Dr. P. N. Tandon ; Dr. R. B. Ganguly ; Dr. S. C. Mehra ; Dr. M. Dyyapu Reddy ; M. S. Parmer ; Dr. O. P. Gupta ; Dr. S. C. Kapoor ; Dr. G. Goel ; Dr. N. Das ; Mr. C. Gronlund ; Mr. M. V. Raghunath ; Shri P. S. Puri ; Shri J. V. Dani ; Dr. D. N. Gulati.

MEMBERS OF THE STANDING TECHNICAL COMMITTEE—PAST AND PRESENT

DR. P. V. BENJAMIN

DR. R. B. BILLIMORIA

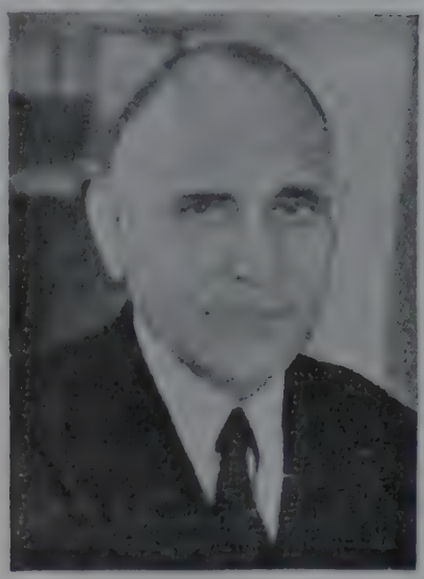
DR. A. C. UKIL

DR. K. VASUDEVA RAO

DR. B. B. YODH

MEMBERS OF THE STANDING TECHNICAL COMMITTEE (*continued*)

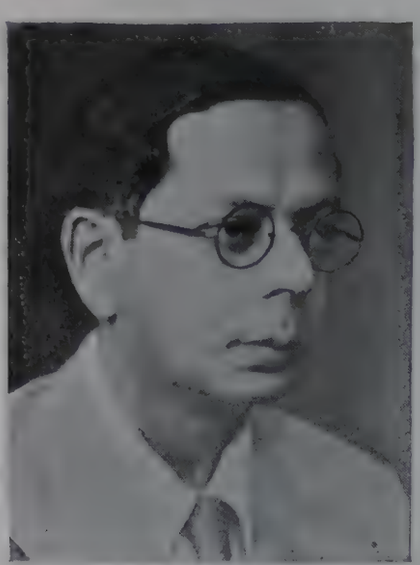
DR. K. L. WIG



DR. R. B. LAL

DR. T. J. JOSEPH

DR. B. K. SIKAND



DR. K. S. RAY

MEMBERS OF THE STANDING TECHNICAL COMMITTEE (*continued*)

DR. K. S. SANJIVI

DR. P. K. SEN

DR. J. FRIMODT-MOLLER

SRI B. M. CARIAPPA
Secretary, The Tuberculosis Association of India

Chapter VI

RECENT DEVELOPMENTS

International co-operation

With the end of the war in 1945 and the attainment of independence in 1947, it was once more possible to devote thought, energy and funds for social welfare in India. Tuberculosis is given a prominent place in our post-independence planning. This coincided with the increased interest which international organisations like the WHO and UNICEF were taking in tuberculosis as a world problem. These organisations have taken keen interest in the problem in India and have given appreciable assistance in the introduction of BCG vaccination programme in the country. They have helped in the establishment of a central BCG Laboratory and three training and demonstration centres. They have also given fellowships to tuberculosis workers for training abroad. They are also taking interest in research on certain problems. Later the Colombo Plan and TCM have also helped in some of the schemes.

B.C.G. Campaign

With the increasing consciousness of the gravity of the tuberculosis problem in India, the means of combating it became a matter for serious consideration. For a campaign for the control of the disease India would require some 3,000-4,000 clinics and some 500,000 beds according to recognised standards used in Western countries. These would cost over 500-600 crores of rupees. It was obvious that from the point of view of men and material, introduction of such a programme was impossible in a reasonable period of time. Therefore, attention was directed to prevention and the chief method chosen was BCG vaccination as this could be introduced rapidly and at a comparatively low cost.

This campaign was introduced on a small-scale in Madanapalle in 1948. Later it was extended to organised groups specially of school children with the help of the International Tuberculosis Campaign. This was further extended on mass scale in 1951.

A little later a specially constituted committee of the Planning Commission appointed to consider development schemes to be

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AND
DOCUMENTATION
UNIT

implemented under the First Five-Year Plan (1951-1956) emphasised the need of preventive measures against tuberculosis, specially in crowded areas, and top priority was given to BCG vaccination. This campaign is directed by the Central Government. The Central Laboratory for the manufacture of the vaccine established in Guindy, Madras, is now the largest single supplier of the vaccine in the world. Under the advice and supervision of the Central Government, through the Technical Adviser of the Ministry of Health and the Tuberculosis Association of India, BCG campaigns are now being conducted in all the States. From 30 to 40 lakhs of rupees are being spent annually in addition to the assistance being given for this purpose by WHO and UNICEF.

There are about 130 BCG teams with over 150 doctors and 750 technicians engaged in this work. The number of people tuberculin tested each month is $1\frac{1}{2}$ to 2 millions and by mid-1956 over 75 million people have been tuberculin tested and about 18 million vaccinated. This is about 85% of the target set for the first five years. The plan is to complete this mass campaign during the Second Plan Period, *i.e.* by 1961.

These figures for vaccination are themselves impressive, but the campaign is of still wider significance because of the general health propaganda associated with it. It is for the first time in the history of India that a nation-wide campaign against a disease has been instituted using, what might be called, war operation technique and this is bound to have its effect on campaigns against other diseases also.

Other schemes

The Government of India have decided that some of the anti-tuberculosis schemes in addition to BCG have to be carried out as part of the national programme. These include :—

Establishment of Clinics and Domiciliary Services.

Establishment of Training and Demonstration Centres.

Provision of beds for isolation and treatment.

Facilities for after-care.

Research.

Clinics are domiciliary service

The main function of a clinic usually is diagnosis, advice and follow-up. In India owing to the paucity of beds for tuberculous patients, it was felt that clinics should have a wider function, that is, they should undertake a certain amount of treatment, particularly

treatment in the patients' homes. This would include health education so as to minimise the risk of infection. The ultimate aim is to have at least one clinic for every 100,000 population. In 1956 there were 170 clinics. It is planned to establish 200 new ones and upgrade 100 of the existing ones by providing each clinic with an x-ray unit with attachment for taking miniature films and with laboratory equipment which will enable culture of tubercle bacilli. These facilities will be extended further during the Third Plan period.

Training and demonstration centres

Some of the larger clinics were planned to be centres for training different categories of personnel—such as doctors, nurses, health visitors and technicians, and also for demonstration of clinic service of a proper standard. As already mentioned, with the help of the WHO and UNICEF three such centres have been opened, one each in Delhi, Patna and Trivandrum. In addition about fifteen such centres are planned to be established before 1961.

Beds for isolation and treatment

There are at present in India 139 in-patient institutions including sanatoria and hospitals. Some of these have facilities for major lung surgery. These, however, can take care only of a few of the thousands of patients requiring hospital treatment and who cannot be dealt with adequately in their homes. In the First Five-Year Plan it was aimed to add at least 20,000 beds, but about 10,000 only could be added. Until recently there has been no special provision for the treatment of tuberculous children. The Government of India has now taken steps to help the establishment of such institutions and two of them have now been opened, one in the South and the other in the North. With the aid of WHO, a Thoracic Surgery Centre has been established in Delhi. There are other such centres, where lung resection facilities are now available. Some of these are in the Christian Medical College Hospital, Vellore; Union Mission Tuberculosis Sanatorium, Arogyavaram; Madar Union Sanatorium, Ajmer; Wanless Sanatorium, Miraj; Christian Medical College Hospital, Ludhiana, and University Chest Centres in Bombay, Calcutta, Madras, Amritsar, etc.

The total number of beds at present available for tuberculous patients in the country is about 22,138. This is to be increased by 10,000 during the Second Five-Year Plan. These beds are to be

provided in crowded localities specially for isolation of infectious patients living in unhygienic homes.

After-care and rehabilitation

The need for after-care colonies and rehabilitation centres for ex-tuberculous patients is fully recognised, but at present these cannot be developed in India extensively as funds are not available. Most tuberculosis institutions employ a fair proportion of ex-patients on their staff when suitable. Only about five institutions have ex-patients' colonies or rehabilitation centres. The Second Five-Year Plan provides for the establishment of eight work centres mainly in association with the larger clinics in cities where patients, ex-patients and their families will be taught handicrafts some of which can be carried out by them as cottage industries.

Research

The importance of research in tuberculosis and its place in the study of epidemiology and methods of control in a country like India cannot be over emphasised. For many years limited investigations have been carried out, and surveys of groups of population with miniature x-ray films have also been done recently. As these could not give a comprehensive picture of tuberculosis in urban or rural areas, a survey on sampling basis was undertaken in 1955. Six teams equipped with mobile x-ray units with laboratory facilities are at work, as stated earlier, under the auspices of the Indian Council of Medical Research.

In 1949, a Field Research Programme covering a population of about 60,000 including urban and rural areas, was started at Madanapalle, with the cooperation of WHO/TRO to ascertain the efficacy of anti-tuberculosis measures under Indian conditions, including BCG vaccination and isolation of infectious cases. The population is being re-examined annually by x-ray and other methods and it is expected that valuable data will be forthcoming from this investigation.

A few institutions have carried out research in drug treatment, development of drug resistance and virulence of strains of acid fast micro-bacteria which produce disease.

More recently a Chemotherapy Research Centre has been started in Madras. This research is being carried out by the Indian Coun-

cil of Medical Research on behalf of the Government of India with the active cooperation of WHO and British Medical Research Council. The main object of this investigation is to find out the efficacy or otherwise of domiciliary treatment of tuberculosis with the new anti-bacterial drugs, especially those which can be administered orally. This is expected to furnish data to assess whether these drugs can be used as a public health measure to control tuberculosis in the country, without the necessity of providing institutional treatment.

Chapter VII

LEGISLATION

Difficulties of notification

Legislation about tuberculosis has not advanced very far in India as yet, and it may be that in the present stage of the campaign this is a good thing. Legislation has to go along with public opinion if it has to be effective. Otherwise the law becomes a dead letter, as it is likely to be openly or secretly flouted. The stigma usually attached to a disease like tuberculosis affects not only the patient but members of the family who may be perfectly well; and social disabilities may follow particularly with regard to marriage and employment. The result is that cases of tuberculosis are hidden and this would be intensified if notifications were compulsory. Voluntary seeking of treatment can be encouraged where compulsion would be resisted, and this is proving more and more successful as the education of the people increases.

Further, notification presupposes a trained staff to collect the data and to deal with cases notified. Therefore, without the possibility of providing for or helping the many cases notified there would be little or no practical use of notifications. Conditions in the majority of Indian houses are such that home isolation is usually impossible and institutions are not available for isolation. Also if a wage earner is found to be suffering from tuberculosis there is no organisation yet which can care for his family if he is removed from his work.

Existing legislation for notification

Notwithstanding these difficulties there are certain areas where some attempts at notification have been made, particularly in the larger towns. Bombay was probably the first city to make notification of tuberculosis compulsory which it did in 1903. Even then, ten years later only 84 cases of tuberculosis had been notified while 2,152 deaths from this disease had been recorded, thus showing that the law was more or less ineffective.

States

Certain States in India have by now framed rules or bye-laws

making it compulsory to notify cases of tuberculosis. These include :

Andhra	Uttar Pradesh	Ajmer
Assam	West Bengal	Coorg
Madhya Pradesh	Hyderabad	Delhi
Orissa	Mysore	Himachal Pradesh
Punjab	Kerala	

Municipalities

Medical Officers have also been ordered to report cases of tuberculosis to the Medical Officer of Health in municipal areas of West Bengal, Madras, Bihar, Orissa, Uttar Pradesh, Punjab and New Delhi, and the head of the family has to notify the disease in municipal areas in Madhya Pradesh and Bombay. The law regarding notification does not extend to rural areas.

Madras Public Health Act

The relevant section in the Madras Public Health Act (1939) perhaps the most comprehensive piece of legislation in this respect, reads as follows :—

> 'Every medical practitioner (and this includes also unregistered village "doctors") who in the course of his practice becomes cognisant of the existence of any case of enteric fever, of tuberculosis in any private or public dwelling other than a public hospital shall, if the case has not already been reported, give information of the same with the least practicable delay.
>
> (*a*) in municipal areas, to the executive authority, the Health Officer, or a Sanitary Inspector, and
>
> (*b*) in non-municipal areas to the Health Officer or Sanitary Inspector or the Village Headman.'

Further the management of a factory or public building, keeper of a lodging house, head of a family, owner or occupier of a house, is also ordered to notify all cases of illness or death from a notifiable infectious disease.

Action after notification is left to the municipal commissioner, or health officer or sanitary inspector.

The Public Health Act which is now being drawn up by the Government of India has included pulmonary tuberculosis as a notifiable disease, and this law when passed will apply to all the States in this country.

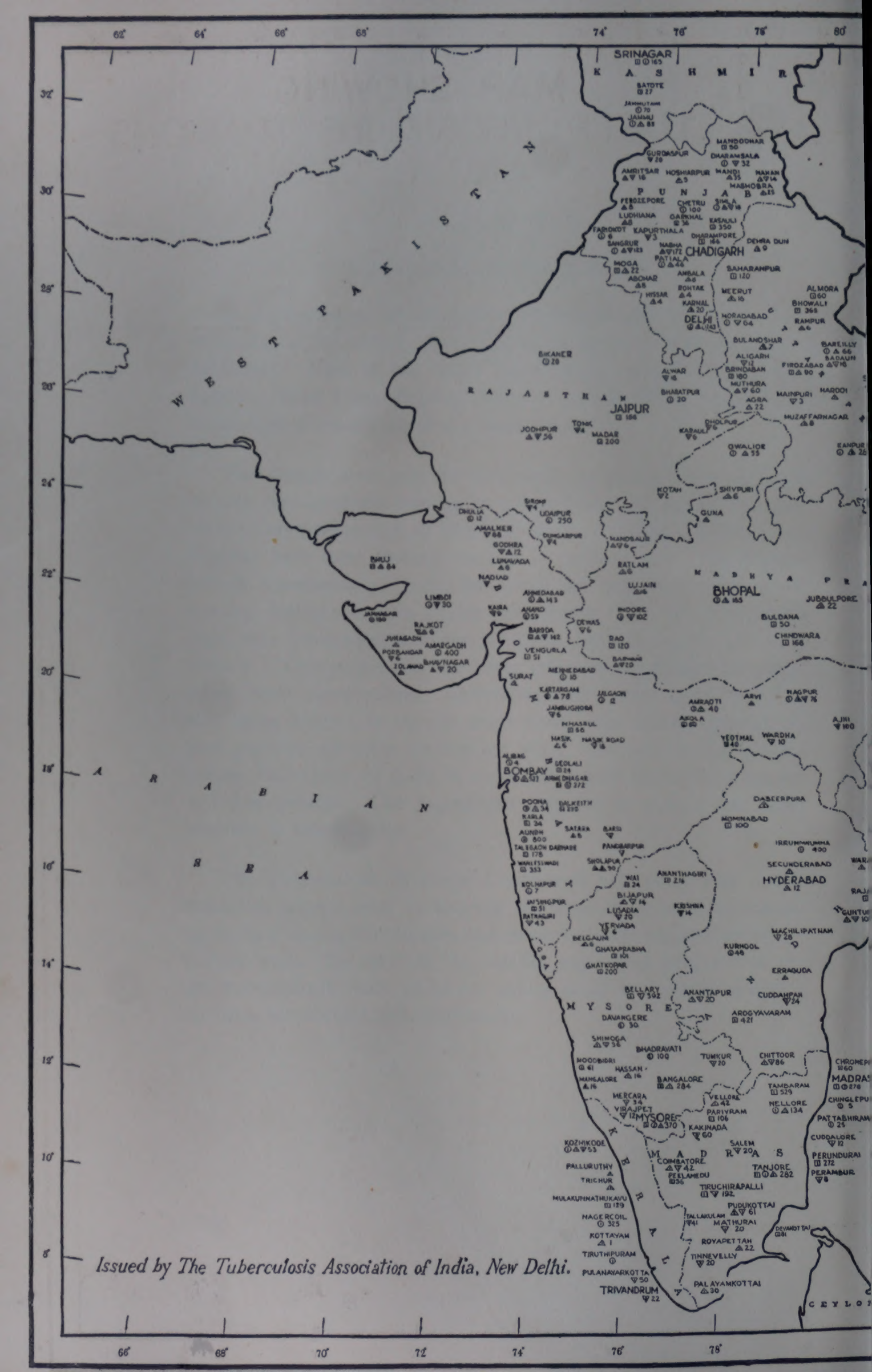
Chapter VIII

TRAINING OF PERSONNEL

In a programme for the control of tuberculosis such as has been indicated, an important place has to be given to the training of personnel. Most of the major tuberculosis institutions in India, however, have been training doctors, nurses, health visitors and technicians for many years in a limited way.

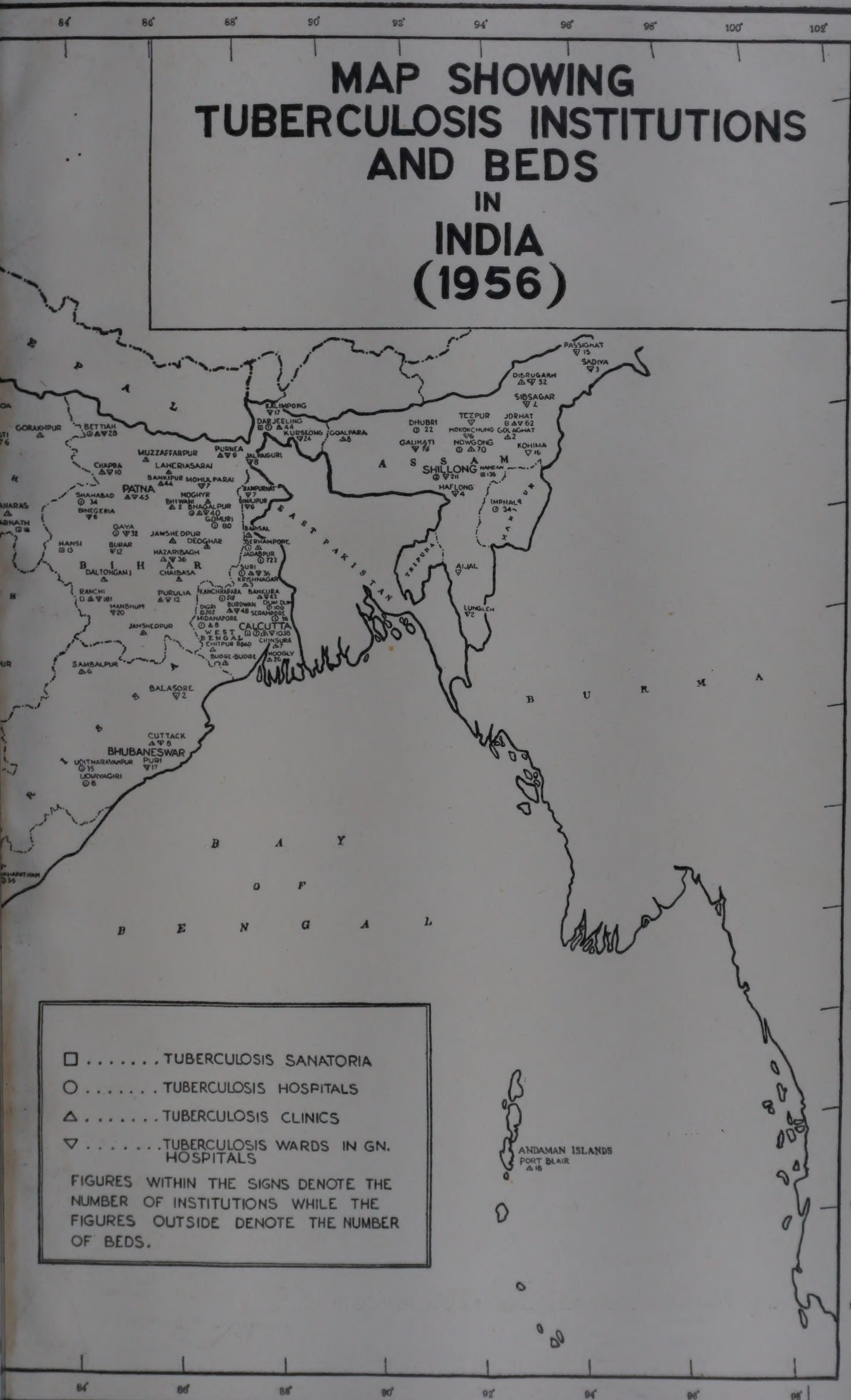
The Government and the University of Madras were the first to start post-graduate training in tuberculosis and award diplomas. Other Universities such as Delhi, Amritsar, Calcutta, Lucknow and Bombay have now diploma courses in tuberculosis. The Tuberculosis Association of India has plans for instituting tuberculosis nursing diploma courses in the near future. For the past fifteen years this Association has been training a limited number of health visitors. This training is also being given by the Bengal and some other State Associations. Laboratory and x-ray technicians are also being trained in certain institutions. As already mentioned, post-graduate refresher courses are being organised by the Tuberculosis Association of India in cooperation with State Governments and Associations. The Association arranged to train a few social workers in tuberculosis.

The Tuberculosis Workers' Conference held every year makes important contribution in keeping the knowledge on tuberculosis up-to-date among the doctors and others specially engaged in tuberculosis work. In view of the rapidly expanding programme for anti-tuberculosis work plans are being made to increase training facilities for doctors and technicians.



Issued by The Tuberculosis Association of India, New Delhi.

MAP SHOWING TUBERCULOSIS INSTITUTIONS AND BEDS IN INDIA (1956)



□ . . . . . TUBERCULOSIS SANATORIA

○ . . . . . TUBERCULOSIS HOSPITALS

△ . . . . . TUBERCULOSIS CLINICS

▽ . . . . . TUBERCULOSIS WARDS IN GN. HOSPITALS

FIGURES WITHIN THE SIGNS DENOTE THE NUMBER OF INSTITUTIONS WHILE THE FIGURES OUTSIDE DENOTE THE NUMBER OF BEDS.